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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/508,024	03/06/2000	TOSHIMICHI KITAOKA	388-991024	7139

7590 06/22/2004  
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EXAMINER

CHAPMAN JR, JOHN E

ART UNIT	PAPER NUMBER
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2856

DATE MAILED: 06/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No. **AK**

09/508,024

Applicant(s)

KITAOKA ET AL.

Examiner

John E Chapman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 8-11 and 21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 12-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 March 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/23/00
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Applicant's election with traverse of the invention of Group I in the reply filed on May 3, 2004 is acknowledged. The traversal is on the ground that a search for the invention of Group I would be coextensive with that for the invention of Group II, and thus there would be no undue burden if all claims were to be examined together. This is not found persuasive because the search required for an ultrasonic probe having an acoustic matching layer is not coextensive with that for a flaw evaluating apparatus having two gate circuits. Furthermore, this is a national stage application for which unity of invention (not restriction) practice is applicable. See MPEP 1893.03(d). It is not necessary to establish a different field of search as set forth in MPEP 808.02.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 8-11 and 21 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

3. The drawings are objected to because "61" and "62" in Fig. 8 should be --31-- and --32--, respectively. See page 18, lines 20-22. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must

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be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The disclosure is objected to because of the following informalities: a first gate 31 and a second gate 32 are not shown in Fig. 7 (page 18, lines 4-5). Rather they appear in Fig. 9. Appropriate correction is required.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3, 5, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller in view of Hansen.

Miller discloses a focus type longitudinal wave ultrasonic probe for material inspecting comprising a curved piezoelectric element (col. 2, lines 15-19) and a matching material 2 having

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an acoustical impedance matched to an acoustic impedance of a test object (col. 2, lines 19-26). Miller teaches using the ultrasonic probe for inspecting pipes (col. 5, lines 52-55) and matching construction materials used in the aerospace field (col. 4, lines 62-65), but does not appear to teach inspecting polymer materials. Nevertheless, it is well known in the art to use ultrasonics to inspect both metal and plastic pipe for flaws, as taught by Hansen (col. 1, lines 9-10), and merely to use the ultrasonic probe of Miller to inspect a plastic pipe comprised of polymer material would have been obvious to one having ordinary skill in the art. The level of ordinary skill in the ultrasonic art is high (equivalent of a Bachelor's degree and several years of experience), and it is within the level of ordinary skill in the art to seek to extend the utility of an ultrasonic probe for testing one type of material to testing other types of materials. Accordingly, it would have been within the level of ordinary skill in the art to seek to extend the utility of the ultrasonic probe of Miller to other materials, such as a plastic pipe comprised of polymer material.

7. Claims 4, 12, 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller in view of Hansen as applied to claim 1 above, and further in view of Ohigashi et al.

The only further difference between the claimed invention and the prior art consists in using an ultrasonic probe with a polymer as a substitute for the conventional inorganic material of Miller (see col. 6, lines 37-43). Ohigashi et al. teaches that polymeric piezoelectric material may be advantageously used as a substitute for conventional inorganic piezoelectric material for ultrasonic vibrators to detect internal defects in various articles (col. 1, lines 14-20).

Accordingly, it would have been obvious to one of ordinary skill in the art to use polymeric

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piezoelectric material as a substitute for the conventional inorganic material of Miller due to ease of production, ease in treatment and fine fit to curved surfaces.

8. Claims 6, 7, 17, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller in view of Hansen as applied to claim 1 above, and further in view of Tone et al.

The only further difference between the claimed invention and the prior art consists in using a second acoustic impedance matching layer. Tone et al. teaches using a second acoustic impedance matching layer in order to improve the sensitivity and band characteristics of an ultrasonic probe (col. 10, lines 16-21). Accordingly, it would have been obvious to one having ordinary skill in the art to use a second acoustic impedance matching layer in order to improve the sensitivity and band characteristics of the ultrasonic probe of Miller. Note that Tone et al. also discloses a matching layer having a continuous change of the acoustic impedance (col. 7, lines 43-51).

Regarding claim 7, the only further difference between the claimed invention and the prior art consists in making the first and second acoustic impedance matching layers separable. It would have been obvious to one having ordinary skill in the art to make the matching layers separable in order to replace the outer layer should it become damaged by contact with the test object, such as a plastic pipe.


9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller in view of Hansen and Ohigashi et al. as applied to claim 4 above, and further in view of Tone et al. as applied to claim 6 above.

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The only further difference between the claimed invention and the prior art consists in using a second acoustic impedance matching layer. It would have been obvious to one having ordinary skill in the art to use a second acoustic impedance matching layer in order to improve the sensitivity and band characteristics of the ultrasonic probe of Miller.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John E Chapman whose telephone number is (571) 272-2191. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John E Chapman  
Primary Examiner  
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